C.12 Water Quality and Resources

This section describes the existing conditions and objectives related to surface water quality and groundwater quality within the proposed action (Project) area. Surface water and groundwater hydrology are described in Section C.7.

C.12.1 Affected Environment

Baseline data were collected from several sources, including: U.S. Geological Survey (USGS), USDA Forest Service (Forest Service), Lahontan Regional Water Quality Control Board (Regional Board), California Department of Water Resources (DWR), and Palmdale Water District (PWD).

C.12.1.1 Topography and Climate

The Project study area includes Littlerock Reservoir and dam, and the potential gravel pit and PWD disposal areas shown in Figure B-1. Additionally, because of the possibility for downstream or down-gradient transport of pollutants, receiving waters downstream of the study area are included in this analysis. The Project area is located at the border of the Antelope Valley and the foothills of the San Gabriel Mountains, southeast of the City of Palmdale. Littlerock Reservoir is located within the Angeles National Forest, and Little Rock Wash (downstream of the reservoir) flows beyond the forest boundary onto the valley floor. The study area is located entirely within the Little Rock Wash Watershed, as defined by the USGS Watershed Boundary Dataset (WBD). The watershed is bounded by Mount Emma Ridge and Pacifico Mountain to the west; Kratka Ridge, Mount Hillyer, and Waterman Mountain to the south; and Mount Williamson, Pallett Mountain, and Pleasant View Ridge to the east. The watershed drains to the north along Little Rock Wash, and typically all runoff infiltrates or evaporates before reaching Rosamond Lake, north of the City of Lancaster. (USGS, 2014)

The Project area lies within the South Lahontan Hydrologic Region, one of ten hydrologic regions in California established by the DWR for management purposes. This HR is also called the South Lahontan Hydrologic Basin Planning Area by the Regional Board. The Project is subject to the water quality standards of the Water Quality Control Plan for the Lahontan Region (Basin Plan) as well as Forest Service water quality management objectives and strategies. The South Lahontan Hydrologic Basin Planning Area is further divided into Hydrologic Units (HU) and Hydrologic Areas (HA). The Project area lies within the Antelope HU. Littlerock Reservoir and all of the upstream contributing area, as well as both potential disposal sites, fall within the Rock Creek HA, while Little Rock Wash (downstream of the reservoir and dam) traverses both the Rock Creek HA and the Lancaster HA. (LRWQCB, 1995)

Climate in the Project area is generally hot and dry in the summer and mild in the winter. Annual average precipitation in the Antelope Valley ranges from 4 to 8 inches, and can exceed 12 inches in the foothills of the San Gabriel Mountains. (PRISM, 2013)

C.12.1.2 Surface Water Quality

Littlerock Reservoir is fed by Little Rock Creek, which is joined by South Fork Little Rock Creek and several unnamed tributaries upstream of the reservoir. The largest unnamed tributary flows through Santiago Canyon and joins Little Rock Creek just upstream of the reservoir. None of these upstream water resources would be affected by the Project or alternatives. However, they are included in this analysis because they contribute to the existing water quality conditions in the Littlerock Reservoir. Downstream of Littlerock Reservoir and dam, Little Rock Creek becomes Little Rock Wash, which starts

out with a fairly well-defined channel and quickly becomes a broad alluvial fan that runs south to north along the Antelope Valley floor, towards Rosamond Lake. Just south of State Route 138, Little Rock Wash crosses an undergrounded segment of the California Aqueduct, but these two waterbodies do not interact.

The Basin Plan for the Lahontan Region "sets forth water quality standards for the surface and ground waters of the Region, which include both designated beneficial uses of water and the narrative and numerical objectives which must be maintained or attained to protect those uses." The designated beneficial uses for surfaces waters within the Project area are listed below in Table C.12-1. Each beneficial use is accompanied by a water quality objective as defined in the Basin Plan. In order to achieve these water quality objectives, the Basin Plan defines effluent limitations for point and non-point sources of pollution. (LRWQCB, 1995)

Table C.12-1. Designated Beneficial Uses for Surface Waters within the Project Area

Hydrologic Unit/Subunit Surface Water Feature	Beneficial Uses													
	MUN	AGR	IND	GWR	FRSH	REC-1	REC-2	COMM	WARM	COLD	SAL	WILD	WQE	FLD
Antelope Hydrologic Unit														
Little Rock Creek	X			X		X	X	X		X		X		
Littlerock Reservoir	X	X	X	X		X	X	X		X		X		
Minor Surface Waters[1]	X	X		X		X	X	X	X	X		X		
Minor Wetlands[1]	X	X		X	X	X	X		X			X	X	X
Lancaster Hydrologic Area														
Rosamond Dry Lake[2]				X			X		X		X	X		

1 - The beneficial uses listed for minor surface waters and minor wetlands within the Antelope Hydrologic Unit are the same for minor surface waters and minor wetlands within the Lancaster and Rock Creek Hydrologic Areas, and therefore those surface water features are not repeated in this table.

2 - During rare periods of heavy rainfall, Rosamond Dry Lake can receive runoff from Little Rock Wash, and therefore is included in this analysis as downstream receiving water. The SAL use does not apply to tributaries of Rosamond Dry Lake.

X Existing or Potential Beneficial Use

MUN Municipal and Domestic Supply – Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.

AGR Agricultural Supply – Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation (including leaching of salts), stock watering, or support of vegetation for range grazing.

IND Industrial Service Supply – Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well repressurization.

GWR Ground Water Recharge – Uses of waters used for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.

FRSH Freshwater Replenishment – Uses of water used for natural or artificial maintenance of surface water quantity or quality (e.g., salinity).

REC-1 Water Contact Recreation – Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.

REC-2 Non-contact Water Recreation – Uses of water for recreational activities involving proximity to water but where there is generally no body contact with water, nor any likelihood of ingestion of water. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

COMM Commercial and Sportfishing – Uses of waters used for commercial or recreational collection of fish or other organisms including, but not limited to, uses involving organisms intended for human consumption.

WARM Warm Freshwater Habitat – Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

COLD Cold Freshwater Habitat – Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

SAL Inland Saline Water Habitat – Uses of waters that support inland saline water ecosystems including, but not limited to, preservation and enhancement of aquatic saline habitats, vegetation, fish, or wildlife, including invertebrates.

WILD Wildlife Habitat – Uses of water that support terrestrial or wetland ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats or wetlands, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

WQE Water Quality Enhancement – Uses of water that support natural enhancement or improvement of water quality in or downstream of a water body including, but not limited to, erosion control, filtration and purification of naturally occurring water pollutants, streambank stabilization, maintenance of channel integrity, and siltation control.

FLD Flood Peak Attenuation/Flood Water Storage – Uses of riparian wetlands in floodplain areas and other wetlands that receive natural surface drainage and buffer its passage to receiving waters.

Narrative and numerical water quality objectives for numerous constituents apply to all surface waters in the Lahontan Region and are defined in the Basin Plan. Compliance with these water quality objectives serves to protect the beneficial uses listed above, and to prevent degradation of existing water quality conditions. Section 303(d) of the Clean Water Act requires the identification of waterbodies that do not meet, or are not expected to meet, water quality standards. These impaired waterbodies are prioritized in the 303(d) list and the development of a Total Maximum Daily Load (TMDL) is required. No TMDLs have been developed within the study area. However, Littlerock Reservoir does not meet water quality standards for the MUN beneficial use and a TMDL is required but not yet complete. The reservoir is currently listed as impaired by metals (manganese). The source of this impairment is unknown. In addition, the Regional Board is considering listing Littlerock Reservoir as impaired by mercury and PCBs. (LRWQCB, 2014)

C.12.1.3 Groundwater Quality

The Project area lies along the southern boundary of the very large Antelope Valley Groundwater Basin. Littlerock Reservoir itself is not underlain by any groundwater basins, but nearly the entire length of Little Rock Wash (beginning just downstream of Littlerock Reservoir dam) is underlain by the Antelope Valley Groundwater Basin. Please see Section C.7 (Hydrology) for a description of the hydrology and hydrogeology of the Basin. Beneficial uses for the basin, as defined above, include: MUN, AGR, IND, and FRSH. Narrative and numerical water quality objectives, as defined in the Basin Plan, apply to all ground waters in the Lahontan Region for the following constituents: bacteria, chemical constituents, radioactivity, taste, and odor.

Groundwater in this basin is typically calcium bicarbonate in character near the surrounding mountains and is sodium bicarbonate or sodium sulfate in character in the central part of the basin. Total dissolved solids in the basin averages 300 mg/L, and ranges from 200 to 800 mg/L. High levels of boron and nitrates have been observed in the basin. (DWR, 2004)

C.12.2 Regulatory Framework

This section provides an overview of the regulatory framework for surface water and groundwater quality. Surface water and groundwater hydrology is addressed in Section C.7.

Table C.12-2 provides a list of plans and policies that are applicable to surface water and groundwater quality, and includes a discussion of the Project's consistency with each plan or policy. Section C.9 (Recreation and Land Use) contains an evaluation of policies within the Forest Service Land Management Plan that are applicable to surface water and groundwater quality.

C.12.2.1 Federal

U.S. Environmental Protection Agency

- **Clean Water Act (CWA).** The CWA was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water. The Project would be applicable to Sections 401, 402, 404, and 303(d) of the CWA. Discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (Sections 401 and 402 of the CWA). Section 404 of the CWA authorizes the U.S. Army Corps of Engineers (USACE) to regulate the discharge of dredge or fill material to the waters of the U.S. and adjacent wetlands. Section 303(d) of the CWA requires states to identify "impaired" water bodies as those that do not meet water quality standards.
- **Safe Drinking Water Act (SDWA).** The SDWA is the main federal law that ensures the quality of Americans' drinking water. Under SDWA, EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards. The SDWA was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources: rivers, lakes, reservoirs, springs, and ground water wells. SDWA authorizes the United States Environmental Protection Agency (USEPA) to set national health-based standards for drinking water to protect against both naturally occurring and man-made contaminants that may be found in drinking water. The USEPA, states, and water systems then work together to make sure that these standards are met.

C.12.2.2 State

State Water Resources Control Board

In California, NPDES permitting authority is delegated to, and administered by, the nine RWQCBs. For the Project, NPDES permits would be delegated to the Lahontan Regional Board. Projects that disturb one or more acres are required to obtain NPDES coverage under the California General Permit for Discharges of Storm Water Associated with Construction Activity. The Construction General Permits require the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP describes Best Management Practices (BMPs) the discharger will use to prevent stormwater runoff from leaving the site.

- **Porter Cologne Water Quality Control Act.** The Porter Cologne Water Quality Control Act of 1967, Water Code Section 13000 et seq., requires the State Water Resources Control Board and the nine Regional Boards to adopt water quality criteria to protect State waters. These criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures.
- **California Water Code §13260.** California Water Code §13260 requires that any person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the State, other than into a community sewer system, must submit a report of waste discharge to the applicable Regional Board. Any actions related to the Project that would be applicable to California Water Code §13260 would be reported to the Lahontan Regional Board.

C.12.2.3 Local

County of Los Angeles

- **County of Los Angeles General Plan.** The County of Los Angeles General Plan General Goals and Policies, Conservation and Open Space Element, and Water and Waste Management Element contain goals and policies to conserve water resources, protect surface and ground water quality, and to ensure proper disposal of waste so that water quality is not degraded.
- **Antelope Valley Areawide General Plan.** The Antelope Valley Areawide General Plan includes policies to conserve natural resources through control of groundwater recharge and to protect the viability of surface water as a habitat for fish and other water-related organisms as well as an important environmental component for land-based plants and animals.

City of Palmdale

- **City of Palmdale General Plan.** The City of Palmdale General Plan contains objectives and policies to protect surface and ground water quality, including water conservation measures, the preservation of natural drainage courses, the protection of groundwater recharge, and the requirement for new development to connect to a sanitary sewer system.

Table C.12-2. Consistency with Applicable Water Quality Plans and Policies

Plan/Policy	Consistency	Explanation
Clean Water Act Sections 401, 402, and 404		
Section 401 - State Certification of Water Quality **Section 402** - National Pollutant Discharge Elimination System **Section 404** - Establishes a program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands.	Yes	All required certifications and permits would be obtained prior to construction of the Project.
Safe Drinking Water Act		
The Safe Drinking Water Act (SDWA) is the main federal law that ensures the quality of Americans' drinking water. Under SDWA, EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards.	Yes	Drinking water quality would not be impacted by this Project. No wells would be installed, and no contaminants would be introduced into the groundwater aquifer.
California Water Code §13260		
Requires an agency to file with the appropriate regional board a report of the discharge, containing the information that may be required by the regional board	Yes	A report of waste discharge would be filed with the Lahontan Regional Board prior to the discharge of any waste to waters of the State.
County of Los Angeles General Plan, Antelope Valley Areawide General Plan, and City of Palmdale General Plan Water Quality Policies.		
Various goals and policies to conserve water resources, protect surface and ground water quality, and to ensure proper disposal of waste so that water quality is not degraded.	Yes	The Project improves the potential for water conservation through increased reservoir storage capacity. Additionally, existing water quality for surface and ground waters would be maintained.

C.12.3 Issues Identified During Scoping

Table C.12-3 below provides a list of water quality issues raised during the public scoping period for the EIS/EIR [see Appendix E (Scoping Summary Report)]. Issues are listed by agency or members of the public providing comment. The table also includes a brief discussion the applicability of each issue to the environmental analysis and where that issue is addressed in the EIS/EIR.

Table C.12-3. Scoping Issues Relevant to Water Quality and Resources

Comment	Consideration in the EIS/EIR
Lahontan Regional Water Quality Control Board	
The Draft EIS/EIR should evaluate the known Hg and PCB concentrations found at Littlerock Reservoir, determine (to the extent possible) the source(s) of Hg and PCBs, and consider and disclose how each of the alternatives may either exacerbate or ameliorate the levels of Hg and PCBs in surface waters, sediments, and fish tissue.	Fish tissue and sediment samples were collected to analyze Hg and PCB content. The source of these contaminants is currently unknown. The potential effect of each alternative on levels of Hg and PCBs in surface waters, sediments, and fish tissue is analyzed in Section C.12.4.
Consider using the State Water Board's website for its "Statewide Mercury Program" as an information source: http://www.swrcb.ca.gov/water_issues/programs/mercury/	Reviewed State Water Board's website and Fact Sheet for Statewide Mercury Control Program for Reservoirs. Information about the likely sources of methylmercury and potential control options was incorporated into this analysis in Section C.12.4.
The Draft EIS/EIR should identify the water quality standards that could potentially be violated by the alternatives and use these standards when evaluating thresholds of significance for impacts (per Chapter 3 of the Basin Plan).	Beneficial uses for all waterbodies in the Project area are listed in in Table C.12-1. Impaired and assessed waterbodies in the Project area are analyzed in Section C.12.4. Water quality objectives are discussed where applicable.
The Project is located within the Rock Creek Hydrologic Area of the Antelope Hydrologic Unit 626.00 and overlies the Antelope Valley Groundwater Basin No. 6-44. The Draft EIS/EIR should identify the beneficial uses of the water resources (per Chapter 2 of the Basin Plan) within the Project area, and include an analysis of the potential impacts to water quality with respect to these resources.	Beneficial uses for waters within the Project area have been identified, and an analysis of the potential impacts to water quality was conducted in Section C.12.4.
Analysis should include a discussion that the Lahontan Regional Water Board recommended the inclusion of Littlerock Reservoir onto the Clean Water Act Section 303(d) list of impaired water bodies (June 19, 2014) due to elevated levels of mercury and PCBs in fish tissue. The State Water Board intends to adopt the 303(d) list within the next few months.	The Lahontan Regional Water Board's recommendation for 303(d)-listing of Littlerock Reservoir for mercury and PCBs is discussed in Section C.12.1.
The Draft EIS/EIR should identify an alternative and define mitigation measures to ensure that concentrations of Hg and PCBs in surface waters, sediments, and fish tissue are not increased by the Project and are decreased to the extent feasible.	Reservoir management alternatives (such as pH adjustment, nutrient addition, oxygenation, and stocking practices) to reduce methylmercury production are not part of the Project. Measures are included as part of the Project to ensure that contaminated sediments would not be mobilized or otherwise allowed to enter the aquatic ecosystem.

C.12.4 Environmental Consequences

Significance Criteria. Appropriate significance criteria have been identified based on the CEQA Appendix G Environmental Checklist, significance threshold guidance from the County of Los Angeles (County of Los Angeles, 1987), and relevance to this analysis based on local conditions and the project description. For purposes of the CEQA analysis in this report, water quality impacts are considered significant if the Project would:

- Criterion WQ1: Violate any water quality standard or waste discharge requirement, or otherwise degrade water quality, including through providing substantial additional sources of polluted runoff or through mobilization of contaminated sediments.
- Criterion WQ2: Degrade groundwater quality through the introduction or mobilization of pollutants.

Impact Assessment Methodology. This impact analysis is based on an assessment of baseline conditions relevant to the site, including ambient water quality, beneficial uses identified in the Lahontan Regional Board's Basin Plan, and existing impairments to waterbodies as listed on the CWA 303d list of impaired and threatened waters that have been identified and reported to the USEPA, which are presented in Section C.12.1. These baseline conditions were evaluated based on their potential to be affected by construction activities as well as operation and maintenance activities related to the Project and alternatives. Potential impacts were then identified based on the predicted interaction between construction, operation, and maintenance activities with the affected environment. Standard Project commitments, described in Appendix A, were considered as Project features in the impact analysis.

Impacts are described in terms of location, context and intensity, and identified as being either short- or long-term, and direct or indirect in nature. Beneficial as well as adverse impacts are identified, with a discussion of the effect and risk to public health and safety, and potential violation of environmental laws.

C.12.4.1 Proposed Action/Project

This section describes the direct and indirect effects of the Project on surface and ground water quality. Direct and indirect effects on surface and ground water hydrology are described in Section C.7.

Direct and Indirect Effects Analysis

Violate any water quality standard or waste discharge requirement, or otherwise degrades water quality, including through providing substantial additional sources of polluted runoff or through mobilization of contaminated sediments (Criterion WQ1)

Impact WQ-1: The Project would violate water quality standards or waste discharge requirements, or otherwise degrade water quality.

The Project includes construction of a subterranean grade control structure within the reservoir, excavation of accumulated sediment to restore 1992 design water storage and flood control capacity, ongoing annual sediment removal to maintain reservoir design capacity, and maintenance or improvement of the roadbed along the sediment disposal haul route to prevent or repair damage to affected roadways. None of these activities would affect water quality upstream of the reservoir. The only waterbodies that could be impacted by the Project are Littlerock Reservoir, Little Rock Wash (downstream of the reservoir and dam), and any unnamed streams along the sediment disposal haul route.

Project activities that could impact water quality include soil disturbance, the accidental release of hazardous materials, and the discharge of contaminated water associated with dewatering activities.

The excavation of accumulated sediment is by definition a soil-disturbing activity. Soil disturbance can lead to increased erosion and sedimentation, and can mobilize pollutants that may have attached to the sediment. All excavation work would occur during the dry season and within the reservoir. Any loose or stockpiled soil not immediately removed to a disposal site would be naturally redistributed along the bed of the reservoir. This sediment would be confined by Littlerock Dam. If soil disturbance associated with excavation were followed by a series of very large storm events that overtopped the dam, an

increased amount of fine sediments could be transported downstream. However, this rapid overtopping would be a rare event and would have a negligible effect on sediment transport downstream. Prior to excavation and off-site transport of any accumulated sediments, a sediment testing program would be implemented to identify any potential contaminants. Any sediment that is discovered to be contaminated would be transported to an approved hazardous material storage facility for disposal. No contaminated sediment would be discharged to any waterbody.

Sediments and fish tissue from Littlerock Reservoir were sampled on August 4, 2014. Fifteen samples, including 11 sediment samples and 4 fish tissue samples, were collected and analyzed for the presence of mercury, chlorinated pesticides, and PCB congeners. For chlorinated pesticides (including DDT), no analyte was detected at or above the method detection limit. For PCB congeners, one analyte (PCB138) was detected in three of the 11 samples. However, the amount of PCB138 that was detected is extremely small. The three sample results range from 1.1 to 1.9 parts per billion (ppb). The method detection limit for this analyte is 1.0 ppb, and the reporting limit (RL) is 5.0 ppb. All 11 sediment samples tested positive for the presence of mercury. Mercury was analyzed as total mercury (Hg), and the element was not speciated in this analysis. Therefore, it is unknown what percentage of this mercury is organic mercury versus methylmercury. The sample results range from 0.0032 to 0.0213 parts per million (ppm). The Agency for Toxic Substances and Disease Registry reports that normal levels of mercury in soil range from 0.02 to 0.625 ppm (ATSDR, 1999). All but one of the sediment sample results fall below the lower value of this range, and the one result that falls within this range lies at the extreme lower end of the range. The sampling results, presented in Appendix C, show that the sediment in Littlerock Reservoir is mostly free of contaminants, and that in cases where a contaminant was detected, the level of contamination is extremely low.

Disposal of clean sediment would occur at the PWD property or in abandoned mining pits shown on Figure B-1. Although one small, ephemeral stream crosses the PWD property, sediment would be placed and graded so that it would not enter the stream channel through subsequent erosion and sedimentation. No mounding of sediment above adjacent grades would occur. If an abandoned mining pit is chosen as the preferred disposal site, all disposal would occur substantially below the surrounding grade, and no sediment would leave the site or enter any waterbody.

SPC HYDRO-1, provided in Appendix A, would ensure that excavated material to be stockpiled on the PWD alternate sediment storage site would not obstruct or divert flow in the ephemeral watercourse that crosses that property. Compliance with the Federal Clean Water Act would ensure no sedimentation from the stockpile during construction. No Project-related erosion in this watercourse is expected. Sedimentation from the stockpile would be minor due to compliance with existing regulations.

Construction of the grade control structure would also result in soil disturbance. However, this disturbance would also occur only within the reservoir, and any loose or stockpiled soil would similarly be confined by Littlerock Dam. Road maintenance and improvement along the sediment disposal haul route could also lead to soil disturbance. However, the haul routes follow paved roads, and any soil disturbance related to maintenance or improvement of the roadways would be minimal and short-term. No new roads would be created, and no paved surfaces would be converted to bare soil conditions.

Excavation and disposal of accumulated sediments, construction of the grade control structure, and maintenance and improvement of haul route roadways would involve the operation of heavy machinery and construction vehicles. The operation of these vehicles and machinery could result in a spill or accidental release of hazardous materials, including fuel, engine oil, engine coolant, and lubricants. Project activities would occur during the dry season and therefore the chance that any spilled or accidentally

released hazardous materials could be carried by runoff into receiving waters would be minimal. Additionally, any spill or accidental release within the reservoir would be contained by Littlerock Dam and would be prevented from entering any other waterbody. Hazardous materials could be spilled or accidentally released along the haul route, either during sediment disposal or roadway maintenance. However, because these activities would occur during the dry season, and due to the generally arid nature of the Project area, the likelihood that any hazardous material would enter a waterbody would be negligible. Additionally, the implementation of SPC WQ-1, which requires the preparation of a Spill Response Plan, would further reduce the potential for any adverse impact to water quality.

Construction of the grade control structure may require dewatering or diversion of stream flow. However, this dewatered or diverted water would be contained by the Littlerock Dam, downstream of the grade control structure. No dewatered or diverted water would be discharged to any receiving water. The excavation and removal of accumulated sediment may require dewatering of the excavation site. In the event that this water would need to be discharged to Little Rock Wash, downstream of Littlerock Dam, all required dewatering and discharge permits would be obtained prior to any discharge. In conformance with dewatering and discharge permit requirements, any dewatered or diverted water would be tested and treated (if necessary) prior to discharge downstream of Littlerock Dam.

SPCs Applicable to Impact WQ-1

SPC WQ-1 (Prepare Spill Response Plan)

SPC HYDRO-1 (Fill From Reservoir Excavation Will Not Be Placed in Stream Channels)

CEQA Significance Conclusion

The implementation of SPCs WQ-1 and HYDRO-1 would ensure this impact is less than significant (Class III).

Degrade groundwater quality through the introduction or mobilization of pollutants (Criterion WQ2)

Impact WQ-2: The Project would degrade groundwater quality through the introduction or mobilization of pollutants.

No groundwater resources would be utilized for the Project, and no new wells would be constructed. Therefore, no new pathways for groundwater contamination would be introduced as a result of the Project. Project activities could degrade groundwater quality if pollutants were introduced either through infiltration of polluted discharge or infiltration of a spilled hazardous material. Littlerock Reservoir sits on bedrock and is not underlain by any groundwater basin. Water contained in the reservoir does not directly interact with groundwater resources. However, water discharged to Little Rock Wash (downstream of Littlerock Dam) could infiltrate into the Antelope Valley Groundwater Basin. Excavation and removal of accumulated sediments could require dewatering activities that would result in a discharge of water to Little Rock Wash. If this water carried pollutants, those pollutants could infiltrate into the groundwater basin. However, conformance with required dewatering and discharge permits would ensure that no contaminated water would be discharged to Little Rock Wash and that no pollutants would infiltrate into the groundwater basin.

Project activities could result in a spill or accidental release of hazardous materials within the reservoir or along the haul route. However, because these activities would occur during the dry season, and due to the generally arid nature of the Project area, the likelihood that any hazardous material would infiltrate into the groundwater would be negligible. The use of herbicides within the Weed Control Plan,

including the control methods to be used, would be prepared consistent with the Forest Service's *Plan for Invasive Plants, Angeles National Forest and San Gabriel Mountains National Monument Environmental Assessment (EA)* (September 2015). Control of weeds would be important to ensure successful establishment of native vegetation along the Reservoir and to prevent new infestations along the access roads. However, manual treatments and herbicide use could result in indirect impacts to water quality both at the Reservoir and at the PWD property potentially used for temporary sediment storage unless appropriate precautions are implemented, as outlined in the *Plan for Invasive Plants EA*. Any herbicide use would conform to the FS's *Plan for Invasive Plants EA*, including formulations to be used and the methods of application. Adhering to this existing FS guidance on weed control would ensure that any mechanical or chemical weed control implemented as part of the proposed Project would not result in secondary impacts to water quality.

CEQA Significance Conclusion

The potential for spilled or accidentally released hazardous materials to infiltrate into the groundwater basin would be very small due to the generally dry conditions of the Project area during the proposed work schedule resulting in less than significant impacts (Class III).

C.12.4.2 Alternative 1: Reduced Sediment Removal Intensity Alternative

Direct and Indirect Effects Analysis

Violate any water quality standard or waste discharge requirement, or otherwise degrades water quality, including through providing substantial additional sources of polluted runoff or through mobilization of contaminated sediments (Criterion WQ1)

Impact WQ-1: The Project would violate water quality standards or waste discharge requirements, or otherwise degrade water quality.

Project activities under this alternative related to Impact WQ-1 would be very similar to those described under the Project. The only difference is that fewer disposal trucks would be utilized, but over a longer period each season for a greater number of years. The potential for a spill or accidental release of hazardous materials to enter receiving waters would remain the same, and would be minor. Impact WQ-1 impacts and CEQA significance for Alternative 1 are the same as those described for the Project. See Section C.12.4.1.

SPCs Applicable to Impact WQ-1

SPC WQ-1 (Prepare Spill Response Plan)

SPC HYDRO-1 (Fill From Reservoir Excavation Will Not Be Placed in Stream Channels)

CEQA Significance Conclusion

The implementation of SPCs WQ-1 and HYDRO-1 would ensure this impact is less than significant (Class III).

Degrade groundwater quality through the introduction or mobilization of pollutants (Criterion WQ2)

Impact WQ-2: The Project would degrade groundwater quality through the introduction or mobilization of pollutants.

Project activities under this alternative related to Impact WQ-2 would be very similar to those described under the Project. The only difference is that fewer disposal trucks would be utilized, but over a longer

period each season for a greater number of years. The potential for a spill or accidental release of hazardous materials to infiltrate into the groundwater basin would remain the same, and would be negligible. Impact WQ-2 impacts and CEQA significance for Alternative 1 are the same as those described for the Project. See Section C.12.4.1.

CEQA Significance Conclusion

The potential for spilled or accidentally released hazardous materials to infiltrate into the groundwater basin would be very small due to the generally dry conditions of the Project area during the proposed work schedule resulting in less than significant impacts (Class III).

C.12.4.3 Alternative 2: No Action/No Project Alternative

Direct and Indirect Effects Analysis

Under the No Action Alternative, sediment removal activities would not occur and sediment would continue to accumulate upstream of Littlerock Dam at the annual average rate of 38,000 cubic yards per year, reducing the capacity of the Reservoir by approximately 23.6 acre-feet annually. This lost capacity could be addressed either by breaching the dam and allowing the natural flow of Little Rock Creek to overtop the dam, or by demolishing the dam and removing approximately 2.8 million cubic yards of sediment and dam concrete. Whether the dam was breached or demolished, it is likely that substantial downstream erosion and sedimentation would result. Dewatering activities will likely be required. Hazardous materials will be used during demolition and excavation, and could be spilled into waterways (Impact WQ-1). It is unknown what project commitments would be included in this alternative, or if they would be adequate to protect downstream resources from degradation. Therefore, this alternative would result in a direct and adverse impact.

Project activities under this alternative related to Impact WQ-2 would be similar to those described under the Project. Demolition and excavation of the accumulated sediment would require a larger number of dump trucks and other construction equipment. However, the potential for a spill or accidental release of hazardous materials to infiltrate into the groundwater basin would remain the same, and would be negligible. Impact WQ-2 impacts and CEQA significance for Alternative 2 are the same as those described for the Project. See Section C.12.4.1.

CEQA Significance Conclusion

It is unknown what project commitments would be included in this alternative, or if they would be adequate to protect downstream resources from degradation, resulting in significant and unavoidable impacts (Class I). The potential for a spill or accidental release of hazardous materials to infiltrate into the groundwater basin would remain the same as that under the proposed Project and Alternative 1, resulting in less than significant impacts (Class III).

C.12.5 Impact Summary

Impact WQ-1 for the Project and Alternative 1 is adverse, but not significant (Class III). Impact WQ-1 is significant and unavoidable under the No Action Alternative (Class I). Impact WQ-2 for the Project, Alternative 1, and Alternative 2 is adverse, but not significant (Class III). Table C.12-4 summarizes impact significance.

Table C.12-4. Summary of Impacts and Mitigation Measures – Water Quality

Impact	Impact Significance				Mitigation Measures/SPC
	Proposed Action	Alt. 1	Alt. 2: No Action	NFS Lands[1]	
WQ-1: The Project would violate water quality standards or waste discharge requirements, or otherwise degrade water quality	Class III	Class III	Class I	Yes	SPC WQ-1 (Prepare Spill Response Plan) SPC HYDRO-1 (Fill From Reservoir Excavation Will Not Be Placed in Stream Channels)
WQ-2: The Project would degrade groundwater quality through the introduction or mobilization of pollutants	Class III	Class III	Class III	Yes	None

1 - Indicates whether this impact is applicable to National Forest System lands.